**Model Question on Engineering Assistants AIR and DD with answers:**

51. The transfer ratio beta of a transistor is 50. The input resistance of the transistor when used in  
the common emitter configuration is 1 kOhm. The peak value of the co current for an A.C. input  
voltage of 0.01 V peak is ?  
(a)100 microA  
(b) 0.01 mA  
(c)0.25 mA  
(d) 500 microA  
Ans:d

52. The cause of the potential barrier in a p-n diode is ?  
(a) Depletion of positive charges near the junction  
(b) Concentration of positive charges near the junction  
(c) Depletion of negative charges near the junction  
(d) Concentration of positive and negative charges near the junction  
Ans:d

53. In forward bias, the width of potential barrier in a p-n junction diode?  
(a)increases  
(b) decreases  
(c) remains constant  
(d) first increases then decreases  
Ans:b

54. A depletion lay consists of?  
(a)electrons  
(b) protons  
(c)mobile ions  
(d) immobile ions  
Ans:d

55. Which of the following when added acts as an impurity into silicon produced n-type semi  
conductor?  
(a)P  
(b) Al  
(c)B  
(d) Mg  
Ans:a

56. In a junction diode, the holes are due to  
(a) protons  
(b) extra electrons  
(c) neutrons  
(d) missing electrons  
Ans:d

57. The intrinsic semiconductor becomes an insulator at  
(a)0°C  
(b)0K  
(c) 300K  
(d) —100°C  
Ans:b

58. For a common emitter circuit if IC/IE = 0.98 then current gain for common emitter circuit will  
be  
(a)49  
(b)98  
(e)4.9  
(d) 25.5  
Ans:a

59. In a p-n junction  
(a) The potential of the p and n sides becomes higher alternately  
(b) The p side is at higher electrical potential than the n side  
(c) The n side is at higher electrical potential than the p side  
(d) Both the p and n sides are at the same potential  
Ans:b

60. In the case of a common emitter transistor amplifier the ratio of the collector current to the  
emitter current Ic/Ie is 0.96. The current gain of the amplifier is ?  
(a)6  
(b)48  
(c) 24  
(d) 12  
Ans:c

61. if a full wave rectifier circuit is operating from 5oHz mains, the fundamental frequency in the  
tipple will be  
(a)100Hz  
(b) 25Hz  
(c)50Hz  
(d) 70.7 Hz  
Ans:a

62. A n-p-n transistor conducts when ?  
(a) both collector and emitter are negative with respect to, the base  
(b) both collector and emitter are positive with respect to the base  
(c) collector is positive and emitter is negative with to the base  
(d) collector is positive and emitter is at same potential as the base  
Ans:c

63. Barrier potential of a p-n junction diode does not depend on?  
(a)doping density  
(b) diode design  
(c)temperature  
(d) forward bias  
Ans:b

64. Reverse bias applied to a junction diode  
(a) increases the minority carrier current  
(b) lowers the potential barrier  
(c) raises the potential barrier  
(d) increases the majority carrier current  
Ans:c

65. In semiconductors at a room temperature  
(a) the conduction band is completely empty  
(b) the valence band is partially empty and the conduction band is partially filled  
(c) the valence band is completely filled and the conduction band is partially filled  
(d) the valence band is completely filled  
Ans:c

66. The output of OR gate is 1 when?  
(a) if either input is zero  
(b) if both inputs are zero  
(c) if either or both inputs are 1  
(d) only if both inputs are I  
Ans:c

67. In a p-n junction photo cell, the value of the photo-electromotive force produced by  
monochromatic light is proportional to ?  
(a) the voltage applied at the p-n junction  
(b) the barrier voltage at the p-n junction  
(c) the intensity of the light falling on the cell  
(d) the frequency of the light falling on the cell  
Ans:c

68. Choose the only false statement from the following.  
(a) in conductors the valence and conduction bands may overlap.  
(b) Substances with energy gap of the order of 10 eV are insulators.  
(c) The resistivity of a semiconductor increases with increase in temperature.  
(d) The conductivity of a semiconductor increases with increase in temperature.  
Ans:c

69. Carbon, Silicon and Germanium atoms have four valence electrons each. Their valence and  
conduction bands are separated by energy band gaps represented by (Eg)C, (Eg)Si and (Eg)Ge  
respectively. Which one of the following relationship is true in their case?  
(a) (Eg)C> (Eg)Si  
(b) (Eg)C< (Eg)Si (c) (Eg)C=(Eg)Si (d) (Eg)C< (Eg)Ge Ans:a 70. Application of a forward bias to a p—n junction (a) widens the depletion zone. (b) increases the potential difference across the depletion zone. (c) increases the number of donors on the n side. (d) increases the electric field in the depletion zone. Ans:c 71. Zener diode is used for? (a) Amplification (b) Rectification (c) Stabilisation (d) Producing oscillations in an oscillator Ans:c 72. A current carrying coil is subjected to a uniform magnetic field. The coil will orient so that its plane becomes ? (a) inclined at 45° to the magnetic field (b) inclined at any arbitrary angle to the magnetic field (c) parallel to the magnetic field (d) perpendicular to magnetic field Ans:c 73. Tesla is the unit of (a) magnetic flux (b) magnetic field (c) magnetic induction (d) magnetic moment Ans:b 74. Energy in a current carrying coil is stored in the form of ? (a) electric field (b) magnetic field (c) dielectric strength (d) heat Ans:b